USDA
United States Department of Agriculture

November 30, 2015

NATIONAL ENGINEERING MANUAL
210 - ENGINEERING
AMENDMENT WI-41

SUBJECT:	ENG – National Engineering Manual (NEM)
Purpose.	Revisions to National Engineering Manual
Explanation of Changes.	Part 501.4 (B) – Last bullet was revised to 30 hours, for consistency with current expectations. Part 501.5 (A) – Revised to reference Part 511. Part 511 (A) – Revised to provide options for checking and approval of project.

Filing Instructions (EFH):

Remove:
Existing Tabulations Sheets
WI Part of: 501-1 to 6, and 511-1

Insert:
New Tabulations Sheet
Pages: All WI Parts of 501, and 511

Wisconsin supplements and transmittal notices for the NEM can be found on the Wisconsin NRCS web site at http://www.nrcs.usda.gov/wps/portal/nrcs/detail/wi/technical/engineering/.

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Attachments

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DIRECTIVE TABULATION SHEET

Title No. 210 **Directive Name/Type:** **National Engineering Manual Wisconsin Supplements**

Directive Number	Issue Date	Part, Subpart, Pages, etc., or Bulletin Subject
Amend 1	11/17/80	National Engineering Manual and Wisconsin Supplements
Amend 2	12/29/80	Circular No. 1, Dam Breach Discharge Criteria
Amend 3	2/24/81	Dividers (Superseded)
Amend 4	6/1/81	Part 520, Reclassification of Dams (Superseded)
Amend 5	12/21/81	Part 503, Safety Signs for Hazardous Conditions (Removed)
Amend 6	9/12/84	Part 501, Authorization, Job Approval (Superseded)
Amend 7	3/20/85	Part 501 and 510, Job Approval and Planning (Superseded)
Amend 8	3/28/86	Part 505, Use of Non-SCS Engineering Services (Superseded)
Amend 9	3/31/86	Part 536, Structural Engineering (Superseded)
Amend 10	9/29/86	Part 512, Construction, Used Materials (Superseded)
Amend 11	3/3/88	Part 540, Field Surveys (Superseded)
Amend 12	11/13/89	Part 503, Safety, Utilities (Superseded)
Amend 13	4/15/92	Part 501, Review and Approval, Job Approval Authority and revised tabulation sheet (Superseded)
Amend 14	6/1/90	Part 512, Construction, Used Materials (Superseded)
Amend 15	9/27/90	New tabulation sheet (Superseded)
Amend 16	9/2/93	Part 510, Planning Report Signatures (Superseded)
Amend 17	3/14/94	Part 512, Construction Used Materials (Non-franchise dealers) (Superseded)
Amend 18	5/22/95	Part 501, Wisconsin Delegated Job Approval (Superseded)
Amend 19	1/14/97	Part 536, Standard Drawings, and Part 541, Drafting
Amend 20	1/22/97	Part 510, Planning Studies
Amend 21	3/3/97	Part 503, Safety and new tabulation sheets (Superseded)
Amend 22	7/29/97	Part 503, Safety Uniform Color Code (Superseded)
Amend 23	6/4/98	Part 542 – Specifications, ASTM Reference List (Superseded)
Amend 24	1/20/99	Parts 505, 511, 512, and 540 Revisions
Amend 25	5/3/99	Parts 501, 512, 520, 540 and 544
Amend 26	8/02/99	Part 506, EXCEL Spreadsheet List (Superseded)
Amend 27	11/29/99	Part 506, Revised EXCEL Spreadsheet List (Removed)
Amend 28	11/29/99	Part 512, As-Built Construction Plans

DIRECTIVE TABULATION SHEET

Title No. 210 **Directive Name/Type:** **National Engineering Manual Wisconsin Supplements**

Directive Number	Issue Date	Part, Subpart, Pages, etc., or Bulletin Subject
Amend 29	08/01/00	Part 542, Specifications, ASTM Reference List (Superseded)
Amend 30	04/24/02	Part 512, Construction, Quality Assurance Personnel Forms
Amend 31	04/01/03	Part 505, Contractor Technical Services (Superseded)
Amend 32	4/21/05	Part 505, Contractor Technical Services (Superseded) and Part 512, Construction
Amend 33	5/24/05	Part 505, Contractor Technical Services (Superseded)
Amend 34	9/21/05	Part 501, Job Approval Delegation Sheets (Superseded)
Amend 35	6/20/06	Part 542, Specifications, ASTM Reference List
Amend 36	1/17/07	Part 501, Authorizations, Job Approval Delegation Sheets
Amend 37	1/17/07	Part 503, Engineering Activities Affecting Utilities
Amend 38	6/4/08	Part 505, Non-NRCS Engineering Services
Amend 39	12/1/08	Part 503, Public Safety at Structure Sites
Amend 40	2/26/15	Revisions to Parts of 501, 503, 505, 510, 511, 512, 536, 540, 542, and 544
Amend 41	11/30/15	Revised WI Parts 501 and 511

SUBPART A – REVIEW AND APPROVAL

§ WI 501.1 Scope

B. Non-NRCS employees

- Non-NRCS employees who are not federal employees and are not licensed to practice engineering in Wisconsin but have received certification under Wisconsin Administrative Code (Chapter ATCP 50) from a Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) Agricultural Engineer may be assigned engineering job approval authority up to that certification rating level.

- Non-NRCS employees who are not federal employees, are not licensed to practice engineering in Wisconsin, and have not received certification under Chapter ATCP 50 from a DATCP Agricultural Engineer may be assigned limited engineering job approval authority (generally, Class I or II) excluding animal waste management practices and embankment dam type structures.

- In all cases, assignment and receipt of engineering job approval authority denotes acceptance of the Field Office Technical Guide Conservation Practice Standards. Assignment and receipt also denotes the individual and the employing agency's acceptance of responsibility for work performed or approved under the assigned authority. The work is subject to quality assurance requirements.

§ WI 501.3 Compliance of Engineering Work With Laws and Regulations

A. Applicable laws, regulations, and codes

- Technical assistance limitations and responsibility for compliance with laws and regulations:

  - When the proposed construction activities will damage other lands or property, or where the work or designed surface water levels must extend to land beyond the ownership of the cooperator, the employee shall not assist with construction layout until the necessary easements, rights of way, and other legal aspects have been resolved by the cooperator.

  - The cooperator will be responsible for securing all necessary permits and complying with all laws or ordinances. NRCS personnel will not interpret the law or act as an agent for cooperators in securing permits but may provide technical data concerning the project. NRCS personnel will advise the cooperator, prior to designing the practice, that there are or may be laws concerning this type of work and to obtain legal assistance as necessary.

  - Before assisting with a practice likely to require a permit, the cooperator should have, or agree to obtain, permits in accordance with state law and

regulations. NRCS personnel will not give assistance under conditions where the cooperator declines to obtain a required permit or where litigation exists.

C. Sealing of construction plans

- All engineering work performed will be approved by an individual with an appropriate level of engineering job approval authority.
- Generally, construction plans will not be sealed by a NRCS licensed professional engineer unless specifically required by state law or local ordinance.
  - The requirement for sealing must be identified during the planning phase to ensure that all work is done under the direction and control of the responsible licensed professional engineer possessing the appropriate level of engineering job approval authority.
  - The State Conservation Engineer will be notified when any construction plans prepared by the NRCS will need to be sealed by a licensed professional engineer.

§ WI 501.4 Engineering Job Approval Authority

B. State Engineering Job Approval Authority (Classes I Through V).

- The Wisconsin Engineering Job Approval Authority form shown in WI 501.9, Exhibit 1, will be used for assigning engineering job approval authority levels to NRCS and partnership employees when joint certification under Chapter ATCP 50 will not be issued.
- A jointly developed form will be used for assigning Wisconsin Engineering Approval Authority and DATCP Conservation Engineering Practitioner Certification under Chapter ATCP 50. Joint delegation of authority shall be utilized to the maximum extent practicable.
- Projects must be approved by a person with appropriate engineering job approval authority in all three categories, as appropriate:
  - Planning: before alternatives are presented to the landowner.
  - Design: after the design and construction plan is finalized, and before construction (installation) is commenced.
  - Construction: after the installation documentation is assembled, the construction plan is "red lined", and before the project is certified.
- Delegated approval levels do not restrict a person with a lesser approval authority from performing any work if someone with the proper engineering job approval authority reviews and approves the finished work.

- Changes made during the installation of a project must be approved in the same manner as the original project.

- A project may consist of one application of a conservation practice (one waterway), more than one application of the same practice (two or more waterways), or the application of more than one conservation practice (waterway and grade stabilization structure). The job class for each practice application shall be determined using the practice controlling factor(s).

  - For practices with multiple controlling factors, the factor with the highest assigned job class will determine the job class for the practice application.

  - A person approving a practice with multiple controlling factors must possess appropriate engineering job approval authority for each controlling factor.

- Projects with more than one application of a conservation practice (either the same or different conservation practice) will be considered one job (system) if the operation of any one practice application can affect the operation of another practice application.

- The assigned level of engineering job approval authority may be appealed by using the following steps in the stated order:

  - Informal discussion with the engineer that recommended the authority. If not resolved, then:

  - A written appeal to the State Conservation Engineer. The appeal shall include documentation of training and competence to support the requested engineering job approval authority level.

- When an employee transfers to an office serviced by an engineer other than the delegating engineer shown on the engineering job approval form, the individual's engineering job approval authority will remain at the same level until the new delegating engineer has an opportunity to assess the employee's capabilities. The receiving engineer shall consult with the former engineer before recommending a new engineering job approval authority.

- The employee with engineering job approval authority shall provide the delegating engineer documentation of continuing technical education in the amount of 30 hours during a 3-year period. The hours may be obtained by attendance at meetings with technical content; local, area, or state training sessions; conferences; or formal classroom training.

C. Approval of Class VI Through VIII Jobs

- Class VI-VIII jobs should be identified as early as possible in the planning phase. A planning study may be required following consultation with the State Conservation Engineer.

- All Class VI-VIII jobs require a pre-design conference between the field engineer and the State Conservation Engineer. Pre-design conferences may be conducted by telephone or may include an on-site review with various specialists participating.

E. Documentation of Design Review

- At the time that construction plans are delivered to a cooperator, an acceptance statement must be signed and dated by the cooperator. Required wording for this cooperator statement is:

> **I have reviewed and understand the construction plans and specifications and agree to complete the work accordingly. Failure to meet these plans and specifications may jeopardize any continued NRCS technical assistance or program financial assistance. I understand that it is my responsibility to secure all necessary permits and licenses, and to complete the work in accordance with all local, state, and federal laws. Modification of these construction plans or specifications must be approved by the NRCS before installation. I assume all responsibility for negotiations and contract agreements with the construction contractors.**

- This statement may be on a separate sheet not attached to the construction plan. The cooperator's acceptance must include a reference to the plan being accepted and must be kept in the cooperator's file.

§ WI 501.5 Engineering Job Review

A. Design Reviews

- Job Classes I-V

  - All projects will be checked (see WI 511.5 for options). The individual approving designs and construction plans is responsible for insuring that the documents have been checked.

  - The person performing the check need not have engineering job approval authority for the practice but must be qualified to examine the job parameters listed.

B. Post Reviews

State engineering quality reviews for Job Classes I-V will be completed using Wisconsin Job Sheet 818, Engineering Quality Review Data (JS-818). All quality review data and reports shall be filed under Engineering – Quality Reviews (210-4).

- Quality reviews are required on five (5) percent of the total practices reported in the state as completed in the fiscal year. Additional guidance is as follows:

- Five (5) percent of the waste storage facilities (Practice standard 313), dams (Practice standards 410 and 378, job class III and above), and other potentially higher risk practices that pose a threat to human health and safety will be checked each year.
- Each low risk practice shall be reviewed at least every 3 years.
- Each individual possessing Engineering Job Approval Authority shall be reviewed at least every 4 years.
- Practices exceeding 400 installations statewide only need to have twenty (20) reviews performed
- The percentage spot check for each Technical Service Provider (TSP) shall be ten (10) percent for the first 3 years after certification or and five (5) percent thereafter.

- The Integrated Data for Enterprise Analysis (IDEA) Tool may be used to estimate the minimum number and distribution of engineering practices to be reviewed. The Assistant State Conservationist for Operations (ASTC-O) will provide each Assistant State Conservationist for Field Operations (ASTC-FO) a list of practices to be checked.
- The State Conservation Engineer (SCE) will make arrangements for the quality review of practices designed and/or approved by Area Engineering staff.
- The Assistant State Conservationist for Field Operations (ASTC-FO) is responsible for determining that quality reviews are properly performed. They will also ensure necessary follow-up and corrective action to quality reviews.
- When the quality reviewer does not have the appropriate level of engineering job approval authority for the conservation practice being reviewed, the results must be accepted by an individual with the proper engineering job approval.
- Engineering items that relate to practice planning, design and installation will be reviewed.
- The engineering items that may be pertinent to a financial assistance program ranking eligibility criteria, application, contracts, and payments shall be referred to appropriate staff for review.
- Missing calculations will be prepared by the designer and reviewed for accuracy and completeness by the quality reviewer.
- A copy of the Engineering Quality Review Data (JS-818) shall be given to the District Conservationist and the County Conservationist, as appropriate. Personal Identifiable Information will be removed from documents when given to non-NRCS staff.
- A final summary report is due by December 1 from each office conducting reviews. The summary will be addressed to the Assistant State Conservationist for Operations (ASTC-O) with copies to the appropriate Assistant State Conservationist for Field Operations (ASTC-FO) and the State Conservation Engineer (SCE).

§ WI 501.9 Engineering Job Approval Authority

- Exhibit 1 – USDA-NRCS Engineering Approval Authority Delegation

U.S. Department of Agriculture
Natural Resources Conservation Service
Engineering Approval Authority
Delegation

Wisconsin Department of Agriculture
Trade and Consumer Protection
Agricultural Engineering Practitioner
Certification

					Original	Revised	Revised
EMPLOYEE:		**OFFICE:**					
SIGNATURE:		**TITLE:**		**DATE:**			
CONCURRED BY:		**TITLE:**	Supervisor	**DATE:**			
CERTIFIED BY:		**TITLE:**	DATCP Agricultural Engineer	**DATE:**			
DELEGATED BY:		**TITLE:**	NRCS Engineer	**DATE:**			

Below is your assigned engineering job approval. All practices, or groups of practices you approve must fall at or below the Job Classes listed. If they do not, another individual with the appropriate Job Class must provide the approval. All practices not listed, or more complex than those listed, must be sent to the State Conservation Engineer.

Conservation Activity Plans (CAP) will be accepted by NRCS staff with the appropriate level of planning engineering job approval for the practices contained in the plan.

Practice Code	Practice Name	Type	Controlling Factors	Job Class						Maximum Approval Authority		
				Units	I	II	III	IV	V	Planning	Design	Construction
	Any Practice		Hazard potential as defined in NEM 501.4 B.(1)	Class	Low	Low	Low	Low	Low			
			Alter the visual resources of beaches and shoreline on the Great Lakes?	N/A	No	No	No	No	No			
			Embankment over active fault?	N/A	No	No	No	No	No			
560	Access Road		Surfacing material (type)	N/A	earth	stone	concrete	asphalt	All			
			Length	Feet	1,500	3,000	5,000	10,000	All			
309	Agrichemical Handling Facility		Storage volume	Gallons	500	1,000	2,000	5,000	All			
591	Amendments for Treatment of Agricultural Waste		None	N/A	---	---	---	---	All			
366	Anaerobic Digester		Animals	Animal Units	150	300	500	1,000	All			
316	Animal Mortality Facility		Annual animal mortality	Animal Units	50	125	250	500	All			
450	Anionic Polyacrylamide (PAM) Application		None	Acres	2	5	10	20	40			
397	Aquaculture Ponds		Same as Pond (378)	---	---	---	---	---	---			
396	Aquatic Organism Passage		None	N/A	---	---	---	---	All			
672	Building Envelope Improvement		None	N/A	---	---	---	---	All			
584	Channel Bed Stabilization		Design capacity	CFS	50	100	200	300	500			
			Design velocity	FPS	2	4	6	8	10			
326	Clearing & Snagging		Length of reach	Feet	1,000	2,500	5,000	10,000	All			

Practice Code	Practice Name	Type	Controlling Factors	Job Class						Maximum Approval Authority		
				Units	I	II	III	IV	V	Planning	Design	Construction
317	Composting Facility		Litter/Manure	Cubic Feet	10,000	20,000	50,000	All				
			Dead animals (annual)	Animal Units	50	125	250	500	All			
656	Constructed Wetland	Embankment	Effective height	Feet	4	6	8	10	All			
			Drainage area	Acres	10	20	40	80	160			
			Storage volume (top of dam)	Acre Feet	5	10	15	30	50			
362	Diversion		Drainage area	Acres	10	20	40	100	All			
554	Drainage Water Management		Area drained	Acres	20	40	80	160	All			
373	Dust Control on Unpaved Roads and Surfaces		Length	Feet	1,500	3,000	5,000	10,000	All			
374	Farmstead Energy Improvement		Implementation of on-farm energy audit recommendations	N/A	—	—	—	—	All			
398	Fish Raceway or Tank		None	N/A	---	---	---	---	All			
655	Forest Trails and Landings		Same as Access Road 560	—	—	—	—	—	—			
410	Grade Stabilization Structure	Embankment (1)	Drainage area	Acres	20	80	320	640	2,000			
			Effective height	Feet	6	10	15	25	35			
			Principal spillway diameter	Inches	12	18	24	36	48			
			Storage volume (top of dam)	Acre Feet	5	15	30	50	85			
			Public road on structure?	N/A	No	No	No	No	Yes			
			Plunge pool	N/A	All	---	---	---	---			
		Toewall or Drop Spillway	Net drop	Feet	2*	3*	4*	3	4			
			Weir capacity	CFS	100	200	300	400	500			
		Box Inlet	Net drop	Feet	2*	3*	4*	4	6			
			Weir capacity	CFS	100	200	300	400	500			
			Within public road right-of-way?	N/A	No	No	No	No	Yes			
		Chute Spillway - Concrete Block or Rock Riprap (2)	Net drop	Feet	4	6	8	10	12			
			Design capacity	CFS	50	100	150	200	300			
		Geotextile Reinforced Vegetated Chute	Net drop	Feet	3	4	5	6	8			
			Design capacity	CFS	10	25	50	100	200			
		Side Inlets (to drainage ditch)	Net drop	Feet	6	8	10	12	16			
			Pipe diameter	Inches	12	18	24	36	48			
412	Grassed Waterway		Drainage area	Acres	50	200	600	1,300	All			
355	Groundwater Testing		Well use/type	N/A	irrigation	livestock	potable	All	---			
561	Heavy Use Area Protection		Site surface area	Square Feet	5,000	10,000	43,560	80,000	All			
			Surface protection (type)	N/A	earth	stone	concrete	asphalt	All			
430	Irrigation Pipeline	≥50 psi	Capacity	GPM	250	500	1,000	2,000	3,500			
		<50 psi	Capacity	GPM	250	500	1,000	3,500	5,000			
436	Irrigation Reservoir		Same as Pond (378)	—	—	—	—	—	—			
441	Irrigation System, Microirrigation		Area irrigated	Acres	0.5	1	5	10	All			

Practice Code	Practice Name	Type	Controlling Factors	Job Class						Maximum Approval Authority		
				Units	I	II	III	IV	V	Planning	Design	Construction
447	Irrigation System, Tailwater Recovery		Pump capacity	GPM	2,000	4,000	6,000	8,000	15,000			
449	Irrigation Water Management		Area irrigated	Acres	40	80	160	320	All			
527	Karst Sinkhole Treatment		None	N/A	All	---	---	---	---			
670	Lighting System Improvement		Implementation of on-farm energy audit recommendations	N/A	---	---	---	---	All			
468	Lined Waterway or Outlet		Design capacity	CFS	10	30	100	200	All			
516	Livestock Pipeline		Length	Feet	1,000	2,000	4,000	5,000	10,000			
			Pipe diameter	Inches	1	2	All					
			Pipe design pressure	PSI	40	60	100	160	300			
576	Livestock Shelter Structure		Shelter area	Square Feet	500	2,500	10,000	25,000	40,000			
457	Mine Shaft and Adit Closing		None	N/A	All	---	---	---	---			
353	Monitoring Well		None	N/A	All	---	---	---	---			
500	Obstruction Removal		None	N/A	All	---	---	---	---			
319	On-Farm Secondary Containment Facility		None	N/A	---	---	---	---	All			
582	Open Channel		Same as Channel Bed Stabilization (584)	N/A	---	---	---	---	---			
378	Pond	Excavated	Use (type)	N/A	livestock	fish & wildlife	recreation	fire	All			
			Surface area	Acres	0.5	1	2	5	All			
		Embankment (1)	Drainage area	Acres	20	80	320	640	2,000			
			Effective height	Feet	6	10	15	25	35			
			Principal spillway diameter	Inches	12	18	24	36	48			
			Storage volume (top of dam)	Acre Feet	5	15	30	50	55			
521A	Pond Sealing or Lining, Flexible Membrane Lining		Surface area	Acres	0.1	1	5	10	All			
521C	Pond Sealing or Lining, Bentonite Treatment		Surface area	Acres	0.1	1	5	10	All			
521D	Pond Sealing or Lining, Compacted Clay Treatment		Surface area	Acres	0.1	1	5	10	All			
533	Pumping Plant		Pump capacity	GPM	250	500	2,000 (3)	6,000 (3)	15000 (3)			
558	Roof Runoff Structure		Area of roof	Square Feet	500	1,000	2,000	5,000	All			
367	Roofs and Covers		Covered area	Square Feet	500	2,500	10,000	25,000	All			
350	Sediment Basin	Embankment (1)	Drainage area	Acres	5	10	50	100	500			
			Effective height	Feet	6	10	15	25	35			
			Principal spillway diameter	Inches	12	18	24	36	48			
			Storage volume (top of dam)	Acre Feet	2	5	15	30	50			
572	Spoil Spreading		Area	Acres	0.5	All	---	---	---			
574	Spring Development		None	N/A	All	---	---	---	---			

Practice Code	Practice Name	Type	Controlling Factors	Job Class						Maximum Approval Authority		
				Units	I	II	III	IV	V	Planning	Design	Construction
442	Sprinkler System		Area irrigated	Acres	40	80	160	320	All			
570	Stormwater Runoff Control		Disturbed area	Acres	.25	.50	1	2	All			
578	Stream Crossing	Culvert Crossing	Drainage area	Acres	50	200	600	1,300	All			
			Plunge pool	N/A	---	---	---	---	All			
		Ford Crossing	Design velocity	FPS	4	6	8	10	All			
580	Streambank and Shoreline Protection	Shoreline	Design wave height	Feet	1	1.5	2	2.5	3			
		Streambank	Design capacity	CFS	100	250	500	1,000	5,000			
			Design velocity	FPS	4	6	8	10	All			
			Channel modification	Feet	100	300	500	1,000	All			
			Fish habitat	Feet	100	300	500	1,000	All			
587	Structure for Water Control		Structure capacity	CFS	10	25	50	100	500			
			Drainage area	Acres	10	50	100	250	500			
			Effective height	Feet	5	10	15	20	All			
606	Subsurface Drain		Drain diameter	Inches	4	6	8	12	All			
			Area drained	Acres	60	160	240	320	All			
607	Surface Drain, Field Ditch		Design capacity	CFS	10	25	50	100	All			
608	Surface Drain, Main or Lateral		Design capacity	CFS	10	25	50	100	500			
			Design velocity	FPS	2	4	6	8	10			
600	Terrace		Area controlled (total system)	Acres	10	20	50	100	All			
			Embankment height	Feet	2	4	6	All				
575	Trails and Walkways		Same as Access Road (560)	---	---	---	---	---	---			
620	Underground Outlet		Acres drained per intake	Acres	5	10	15	40	All			
			Diameter	Inches	6	8	12	18	All			
635	Vegetated Treatment Area	Infiltration	Contributing area (drainage area)	Square Feet	5,000	10,000	43,560	80,000	All			
		Overland	Contributing area (drainage area)	Square Feet	5,000	10,000	43,560	80,000	All			
		Buffers	Contributing area (drainage area)	Square Feet	5,000	10,000	43,560	80,000	All			
		Milking Center	Design capacity	GPD	100	200	300	400	500			
		Feed Storage Runoff	Contributing area (drainage area)	Square Feet	5,000	10,000	43,560	80,000	All			
360	Waste Facility Closure	Earthen Liner	Storage volume	1000 cu. ft.	25	50	100	500	2000			
		Concrete Liner	Storage volume	1000 cu. ft.	25	50	100	500	2000			
632	Waste Separation Facility	Livestock Yard	Animals	Animal Units	250	500	750	1,000	All			
			Wall height	Feet	2*	4*	6*	8*	All			
			Contributing area (drainage area)	Square Feet	5,000	10,000	43,560	80,000	All			

Practice Code	Practice Name	Type	Controlling Factors	Job Class						Maximum Approval Authority		
				Units	I	II	III	IV	V	Planning	Design	Construction
313	Waste Storage Facility	Earthen Facilities - Earthen Embankment	Effective height	Feet	10	15	20	25	All			
		Earthen Facilities - In-Place Earth	Design storage volume	1000 cu. ft.	100	200	500	1,000	2,000			
		Earthen Facilities - Clay Liner	Design storage volume	1000 cu. ft.	100	200	500	1,000	2,000			
		Earthen Facilities - Geomembrane & Geosynthetic Clay Liner	Design storage volume	1000 cu. ft.	100	200	500	1000	2,000			
		Earthen Facilities - Concrete Liner	Design storage volume	1000 cu. ft.	100	200	500	1,000	2,000			
		Structural Facilities	Design storage volume	1000 cu. ft.	25	50	100	500	2,000			
			Prequalified (4)	N/A	---	---	---	---	All - subject to design storage volume			
			Wall height	Feet	4*	6*	8*	10*	All			
634	Waste Transfer	Gravity Flow Pipe	Length	Feet	50	100	150	200	All			
		Pressurized Flow Pipe	Pipe diameter	Inches	4	8	12	15	All			
		Reception Tank/Trough - Cast in Place	Wall height	Feet	4*	6*	8*	10*	All			
		Prefabricated	Reception Tank - Sewage Tanks (5)	N/A	---	---	---	---	All			
		Prefabricated	Manhole/Trough	N/A	---	---	---	---	All			
629	Waste Treatment	Milking Center	Design capacity	GPD	100	200	300	400	500			
		Silage Leachate	Site surface area	Square Feet	5,000	10,000	43,560	80,000	All			
			Surface protection (type)	N/A	earth	stone	concrete	asphalt	All			
638	Water and Sediment Control Basin		Embankment height	Feet	2	4	6	All	---			
642	Water Well		Casing diameter	Inches	4	6	8	12	All			
			Estimated depth	Feet	100	200	300	All	---			
614	Watering Facility		Animals	Animal Units	50	100	300	500	All			

Practice Code	Practice Name	Type	Controlling Factors	Job Class						Maximum Approval Authority		
				Units	I	II	III	IV	V	Planning	Design	Construction
351	Well Decommissioning	Drilled Well	Estimated depth	Feet	100	300	500	All	---			
		Driven Well Point	Estimated depth	Feet	10	25	All	---	---			
		Dug Well	None	N/A	All	---	---	---	---			
658	Wetland Creation		Same as Standard 657	---	---	---	---	---	---			
659	Wetland Enhancement		Same as Standard 657	---	---	---	---	---	---			
657	Wetland Restoration	Embankment	Drainage area	Acres	10	20	40	80	160			
			Effective height	Feet	4	6	8	10	All			
			Storage volume (top of dam)	Acre Feet	5	10	15	30	50			
		Scrape	Surface area	Acres	0.5	1	All	---	---			
		Tile Break	Drain diameter	Inches	6	12	All	---	---			
		Ditch Plug	Ditch depth	Feet	4	6	All	---	---			
			Drainage area	Acres	80	160	320	640	All			

Footnotes

(1) All with relatively impervious cutoff, simple foundation needs and standard or proven designs. Hazard class "Low" only. Product of Storage x Height not to exceed 3,000.

(2) Includes all precast concrete block, articulated and non-articulated.

(3) Total Dynamic Head limited to 30 feet.

(4) Prequalified structures are listed in the Engineering Field Handbook, Chapter 17.

(5) Department of Safety and Professional Services - Safety and Building Division Plumbing Products Database.

* Structural standard detail drawings published on the Wisconsin NRCS web site.

§WI 511.5 Design Checking and Review.

A. The individual approving designs and construction plans is responsible for insuring that the documents have been checked.

- All designs and construction plans will be checked.
- Class I and II jobs, other than waste management practices, may be designed, checked and approved by the same person. If this is the case, the person must diligently check the design and construction plans before approving them.
- Class III-V, and all waste management practices, will be checked by someone other than the designer. The following options are acceptable for checking and approval:
  - The checker may approve the project.
  - After checking by a second party, the designer may approve the project.
  - The project could be designed, checked, and approved by three different people.
- The person performing the check need not have job approval authority for the practice but must be qualified to examine the job parameters listed in NEM 511.5.